CITY OF WESTFIELD
Stormwater Management Technical Standards Manual

March 2016

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CHAPTER 03100 POLICY AND PROCEDURES

SECTION 03101 INTRODUCTION

03101.01 Section Purpose

This manual provides technical standards for proper stormwater management and stormwater quality practices for those engineers, builders, contractors, land planners, and property owners contemplating some form of land alteration or improvement within land areas under the City of Westfield Municipal MS4 Stormwater Jurisdiction. This Stormwater Technical Standards Manual is intended to establish the policies relating to stormwater management, stormwater quality practices, and flood control, submittal requirements and procedures for issuance of a stormwater permit, and procedures for inspection, testing and final acceptance of stormwater facilities.

The contents of the Manual are the result of a joint effort by Hamilton County, the City of Carmel, the Town of Fishers, the City of Noblesville, and the City of Westfield. The regulations have been established to accomplish the following objectives:

- Provide for consistent, high quality project design and evaluation by consolidating current departmental standards and "policies" within a single document.
- Establish minimum requirements and standards for stormwater management plan submittals and project reviews.
- Facilitate more consistent review of stormwater permit applications and land alteration plans by the stormwater permit staff.
- Establish a standard for the proper and consistent installation of stormwater facilities, with a high level of workmanship, according to the approved stormwater management plan.
- Minimize the impacts of new development and redevelopment projects on existing stormwater management facilities.

This Manual was developed with the assumption that the user will possess a basic understanding of civil engineering design, construction, stormwater quality practices, or land alteration, depending upon the users particular area of expertise. Readers of the Manual which are not qualified by education and experience in the field of construction, engineering, stormwater quality practices, or land alteration should consult with a more qualified person or persons possessing professional expertise in one or more of these fields prior to application of the requirements set forth herein.

03101.02 Provisions

This Manual, together with all future revisions, shall be referred to as **"The City of Westfield Stormwater Management Technical Standards Manual".** The City of Westfield has been granted authority to "protect the safety, health, and general welfare of the citizens" of the City of Westfield by requiring compliance with standards and practices, which result in proper stormwater drainage and sediment control in the accomplishment of land alterations or other improvements.

03101.03 Applicability

The provisions of this Manual shall apply to the following areas within Hamilton County:

1. **All territory of the County that is not located within a municipality;**

2. **All territory of a municipality located within the County that has adopted a policy or resolution that the territory of the municipality or a portion of the territory of a municipality be included within the applicability area of this Manual;**

3. **All areas within a municipality which lie within the drainage shed of a regulated drain.**

This Manual applies to all land altering projects as stated and defined in the City of Westfield Ordinance Number 05-30 (An Ordinance to Establish Overlay Zone Districts and Regulations for Storm Water Management). Any land alteration, within the jurisdiction of this Manual, must be accomplished in conformity with the stormwater requirements set forth herein. "Land Alteration" shall generally refer to any on-site or off-site action taken relative to land which either:

1. Changes the contour; or
2. Increases the runoff rate or volume; or
3. Changes the elevation; or
4. Decreases the rate at which water is absorbed; or
5. Changes the drainage pattern; or
6. Creates or changes a stormwater facility; or
7. Involves construction, enlargement, location or relocation of any building on a permanent foundation; or
8. Increases the delivery of point and/or non-point source pollution to streams; or
9. Relocates, encloses, or alters a stream or open channel stormwater conveyance; or
10. Creates an impoundment.

This Manual should be used in conjunction with the applicable City of Westfield stormwater management ordinances. Additional requirements related to land alteration may be found in the existing codes and ordinances of the City of Westfield. Exceptions to the provisions of this Manual are provided in the applicable City of Westfield stormwater management ordinances.

When the project site that is located within the drainage shed of a Hamilton County Regulated Drain falls within the corporate limits of a municipality, adherence to the requirements of both entities is required. In case there is a conflict between the requirements of the municipality and those of the County, the most restrictive requirements shall apply.

03101.04 Stormwater Manual Organization

This Manual is organized to present the technical and engineering procedures and criteria needed to comply with the land areas under the City of Westfield government jurisdiction stormwater regulations. Copies of the City of Westfield's pertinent stormwater management ordinances are presented in the Appendices of this Chapter. In addition, the general design policy and procedures are presented.

Each chapter of this Manual contains an initial section that presents all of the policies and procedures that must be satisfied for approval. These policies and procedures shall be considered as design criteria that are unique for approval within the jurisdiction of this Manual.

The site designer is encouraged to review the LID discussion in Chapter 03700 prior to the site design to take advantage of runoff reduction recognitions provided towards water quantity calculations discussed in earlier chapters if LID practices are utilized as part of the site design.

03101.05
Updating

The process of updating this Manual shall be adopted as policy by the City of Westfield. This Manual shall be periodically updated and revised, as necessary, to reflect current engineering practices and information applicable to land areas under the City of Westfield government jurisdiction. Users of this Manual are encouraged to obtain any and all updates and supplements to this Manual each time a land alteration project is considered. The ultimate responsibility for checking for and obtaining updated material shall be the responsibility of the user.

The most current standards shall be required for approval of a land alteration. The incorporation of outdated standards in the design, implementation, and construction of a land alteration shall be cause for the City of Westfield to reject the proposed land alteration.

SECTION 03102 PERMIT REQUIREMENTS AND PROCEDURES

03102.01
Introduction

The project site owner shall submit an application for a stormwater management permit to the City of Westfield. The application will include a Draft Notice of Intent letter (NOI) that would also act as permit application form if the project site is one (1) acre or more to be disturbed, construction plan sheets, stormwater drainage technical report, operations and maintenance manual, a stormwater pollution prevention plan, and any other necessary support information. Specific information to be included in the application can be found in Section 03102.03 below. One (1) copy of each required application material must be submitted to the Westfield Public Works Department (WPWD). The original Rule 5 NOI should also include the original proof of publication and a $100 check made out to IDEM. Additionally, a digital copy of the construction plans is required in a format accepted by the WPWD. All plans, reports, calculations, and narratives shall be signed and sealed by a professional engineer or a licensed land surveyor, registered in the State of Indiana.

After the WPWD receipt of the application, the applicant will be notified as to whether their application was complete or insufficient. The applicant will be asked for additional information if the application is insufficient. All plans, reports, calculations, and narratives shall be signed and sealed by a professional engineer or a licensed land surveyor, registered in the State of Indiana. The information provided will be reviewed in detail by WPWD and/or its plan review consultant(s). Once all comments have been received and review completed, the WPWD will either approve the project or request modifications.

For the WPWD, copies of the final, approved construction plans, stormwater drainage technical report, operations and maintenance manual, stormwater pollution prevention plan for construction sites, and post-construction stormwater pollution prevention plan shall also accompany the above-noted written notification and proof of publication. The number of required copies varies from case to case and should be determined by contacting the WPWD. A pre-construction meeting is required to be held with the participation of the WPWD and other entities involved prior to any grading activity to ensure that appropriate perimeter control measures have been implemented on the site and the location of any existing tiles has been properly marked.

Once construction starts, the project owner shall monitor construction activities with a maintenance log and inspect all stormwater pollution prevention measures in compliance with the City of Westfield's applicable ordinances and the terms and conditions of the approved permit. Upon completion of construction activities, as-built plans in state plan coordinates on CD must be submitted to the WPWD. A Notice of Termination (NOT) shall be sent to the WPWD once the construction site has been stabilized and all temporary erosion and sediment control measures have been removed. The WPWD, or a representative, shall inspect the construction site to verify the requirements for a NOT have been met in accordance with the Rule 5 (327 IAC 15-5). Once the applicant receives a "verified" copy of the NOT, they must forward a copy to IDEM. Permits issued under this scenario will expire 5 years from the date of issuance. If construction is not completed

within 5 years, the NOI must be resubmitted at least 90 days prior to expiration. A flow chart of the major steps in the stormwater plan review/permit process is provided as Exhibit 03102-1.

Specific projects or activities may be exempt from all or part of the informational requirements listed below. Exemptions are detailed in the applicable ordinances and "Applicability and Exemptions" Sections of Chapters 03200 through 03700. If a project or activity is exempt from any or all requirements of the ordinances or this Manual, an application should be filed listing the exemption criteria met, in lieu of the information requirements listed below. The level of detailed information requested below is not required from individual lots, disturbing less than 1 acre of land, developed within a larger permitted project site. Review and acceptance of such lots is covered under Section 03102.07 of this Chapter.

In order to gain an understanding of the stormwater management requirements for a specific project, a developer or his/her engineer may submit conceptual drainage plans and calculations to the WPWD and request an informal meeting to discuss the proposed project. The direction provided by the WPWD as a result of such a review is based on preliminary data and shall not be construed as an approval or binding on either party.

03102.02
Draft Notice of Intent

The NOI is a standard form developed by the Indiana Department of Environmental Management which requires general project information. As part of the WPWD Stormwater Management Permit application package, the NOI form should be completed in full based on data and information available at the time of application.

Accompanied by proof of publication in a newspaper of general circulation in the affected area that notified the public that a construction activity is to commence must include the following language:

> "(Company name, address) is submitting an NOI letter to notify **the** City of Westfield and the Indiana Department of Environmental Management of our intent to comply with the requirements of **the applicable** City of Westfield **stormwater management ordinances**, as well as the requirements of 327 IAC 15-5 and 327 IAC 15-13, to discharge stormwater from construction activities for the following project: (name of the construction project, address of the location of the construction project, and Parcel Identification Number). Run-off from the project site will discharge to (stream(s) receiving the discharge(s))."

03102.03
Construction Plans

Construction plan sheets not to exceed 24" by 36" in size) with a scale of 1 inch = 20 feet, 30 feet, 40 feet, 50 feet or 60 feet, and an accompanying narrative report shall describe and depict the existing and proposed conditions. Note that in order to gain an understanding of and to evaluate the relationship between the proposed improvements for a specific project section/phase and the proposed improvements for an overall multi-section (phased) project, the detailed information requested herein for the first section/phase being permitted must be accompanied by an overall project plan that includes the location, dimensions, and supporting analyses of all detention/retention facilities, primary conveyance facilities, and outlet conditions. Construction plans need to include the following detailed items:

i. Title sheet which includes location map, vicinity map, operating authority, design company name, developer name, and index of plan sheets.

ii. A copy of a legal boundary survey for the site, performed in accordance with Rule 12 of Title 865 of the Indiana Administrative Code or any applicable and subsequently adopted rule or regulation for the subdivision limits, including all drainage easements and wetlands.

iii. A reduced plat or project site map showing the parcel identification numbers, lot numbers, lot boundaries, easements, and road layout and names. The reduced map must be legible and submitted on a sheet or sheets no larger than eleven (11) inches by seventeen (17) inches for all phases or sections of the project site.

iv. An existing project site layout that must include the following information:

a. A topographic map of the land to be developed superimposed on a County GIS ortho-aerial map at a scale of 1"=100". The exhibit should provide the contour information and include all roads and buildings within a minimum 500' radius beyond the project boundaries. The contour intervals for the land to be developed shall be one (1) foot when slopes are less than or equal to two percent (<2%) and shall be two (2) feet when slopes exceed two percent (>2%). All elevations shall be given in North American Vertical Datum of 1988 (NAVD). The horizontal datum of topographic map shall be based on Indiana State Plane Coordinates, NAD83. The map will contain a notation indicating the noted datum information. The names of adjoining property owners must be labeled on the map.
b. Location, name, and normal water level of all wetlands, lakes, ponds, and water courses on or adjacent to the project site.
c. Location of all existing structures on the project site.
d. One hundred (100) year floodplains, floodway fringes, and floodways. Please note if none exists.
e. Identification and delineation of vegetative cover such as grass, weeds, brush, and trees on the project site.
f. Location of storm, sanitary, combined sewer, and septic tank systems and outfalls.
g. Land use of all adjacent properties.
h. Identification and delineation of sensitive areas.
i. The location of regulated drains, farm drains, inlets and outfalls. Prior to construction plan design beginning, all existing regulated drains on the site are to be located, exposed, and invert shots taken to ensure the system is installed deep enough to provide drainage to the upstream watershed. This is also applicable if the site outlets into a regulated drain and no as-built drawings on the drain exist.
j. Location of all existing cornerstones within the proposed development and a plan to protect and preserve them.
k. Location of all known wells (including abandoned wells).
l. Location of known potential contaminant facilities.

v. A grading and drainage plan, including the following information:

a. All information from the existing site layout items listed above.
b. Location of all proposed site improvements, including roads, utilities, lot delineation and identification, proposed structures, finished floor elevations, and common areas with elevations for those improvements.
c. One hundred (100) year floodplains, floodway fringes, and floodways. Please note if none exists.
d. Delineation of all proposed land disturbing activities, including off-site activities that will provide services to the project site.
e. Information regarding any off-site borrow, stockpile, or disposal areas that are associated with a project site, and under the control of the project site owner.
f. Proposed topographic information at one-foot contour interval.
g. Location, size, and dimensions of all existing streams to be maintained, and new drainage systems such as culverts, bridges, storm sewers, conveyance

channels, and 100-year overflow paths/ponding areas shown as hatched areas, along with all associated easements.

h. Pipes and associated structures data, including sizes, lengths, and material
i. Location, size, and dimensions of features such as permanent retention or detention facilities, including natural or constructed wetlands, used for the purpose of stormwater management. Include existing retention or detention facilities that will be maintained, enlarged, or otherwise altered and new ponds or basins to be built.
j. Emergency flood routing path(s) and their invert elevations from detention facilities to the receiving system.
k. One or more typical cross sections of all existing and proposed channels or other open drainage facilities carried to a point above the 100-year high water and showing the elevation of the existing land and the proposed changes, together with the high water elevations expected from the 100-year storm under the controlled conditions called for by The City of Westfield's applicable stormwater management ordinance(s), and the relationship of structures, streets, and other facilities.
l. A drainage summary, which summarizes the basic conditions of the drainage design, including site acreage, off-site/upstream acreage, allowable release rates, post-developed 10-year, and 100-year flows leaving the site, volume of detention required, volume of detention provided, and any release rate restrictions.
m. Arrows designating the direction of stormwater runoff.
n. Spot elevations appropriate to define elevations.

vi. Utility plan sheet(s) showing the location of all existing and proposed utility lines for the project, including all available information related to the utilities, such as pipe size and material, and invert elevations. Include plan and profiles of all sanitary and storm infrastructure along with a separate sheet for the water plan.

vii. Storm sewer plan/profile sheet(s) at a scale of 5 vertical and 50 horizontal showing the elevation, size, length, location of all proposed storm sewers. Existing and proposed ground grades, storm sewer structure elevations, and all existing and proposed utility crossings also must be included. The actual correct datum (not an assumed one) must be used for the profile sheets and all pipe inverts, top of casting elevations, casting types, structure numbers, and pipe slopes clearly labeled.

viii. A plat on the same sheet size used for recording, including the following information:

a. Legal description.
b. Cross reference to Rule 12.
c. Regulated drain statement and table.

ix. Proposed subdivision landscape plans

x. A copy of the subdivision covenants

xi. Any other information required by the WPWD in order to thoroughly evaluate the submitted material.

A written stormwater drainage technical report must contain a discussion of the steps taken in the design of the stormwater drainage system. Note that in order to gain an understanding of and to evaluate the relationship between the proposed improvements for a specific project section/phase and the proposed improvements for an overall multi-section (phased) project, the detailed information requested herein for the first section/phase being permitted must be accompanied by an overall project plan that includes the location, dimensions, and supporting analyses of all detention/retention facilities, primary conveyance facilities, and outlet conditions. The technical report needs to include the following detailed items:

i. A summary report, including the following information:

   a. Description of the nature and purpose of the project.
   b. The significant drainage problems associated with the project.
   c. The analysis procedure used to evaluate these problems and to propose solutions.
   d. Any assumptions or special conditions associated with the use of these procedures, especially the hydrologic or hydraulic methods.
   e. The proposed design of the drainage control system.
   f. The results of the analysis of the proposed drainage control system showing that it does solve the project's drainage problems and that it meets the requirements of the ordinance and these standards. This must include a table summarizing, for each eventual site outlet, the pre-developed acreage tributary to each eventual site outlet, the unit discharge allowable release rate used, the resulting allowable release rate in cfs for the post-developed 10-year and 100-year events, pre-developed 2-year flow rates in cfs as well as pre- and post-developed flow rates for 10- and 100-year events. The worksheet provided as Table 03102-1 should be filled and submitted as part of the report. Any hydrologic or hydraulic calculations or modeling results must be adequately cited and described in the summary description. If hydrologic or hydraulic models are used, the input and output files for all necessary runs must be included in the appendices. A map showing any drainage area subdivisions used in the analysis must accompany the report.
   g. Soil properties, characteristics, limitations, and hazards associated with the project site and the measures that will be integrated into the project to overcome or minimize adverse soil conditions.
   h. A narrative and photographic record of the condition of the downstream receiving system.
   i. Identification of any other State or Federal water quality permits that are required for construction activities associated with the owner's project site.
   j. Proof of Errors and Omissions Insurance for the registered professional engineer or licensed surveyor showing a minimum amount of $1,000,000 in coverage.

ii. A Hydrologic/Hydraulic Analysis, consistent with the methodologies and calculation included in Chapters 03200 and 03300 of this Manual, and including the following information:

   a. A hydraulic report detailing existing and proposed drainage patterns on the subject site. The report should include a description of present land use and proposed land use. Any off-site drainage entering the site or any downstream restrictions should be addressed as well. This report should be comprehensive and detail all of the steps the engineer took during the design process.
   b. All hydrologic and hydraulic computations should be included in the submittal. These calculations should include, but are not limited to the following: runoff curve numbers and runoff coefficients, runoff calculations, stage-discharge relationships, times-of-concentration and storage volumes.

c. Copies of all computer runs. These computer runs should include both the input and the outputs. Electronic copies of the computer runs with input files must also be included.
d. A set of exhibits should be included showing the drainage sub-areas and a schematic detailing of how the computer models were set up.
e. A conclusion which summarizes the hydraulic design and details how this design satisfies the City of Westfield's applicable stormwater management ordinance(s) and these Standards.

03102.05 Stormwater Pollution Prevention Plan for Construction Sites

A stormwater pollution prevention plan associated with construction activities must be designed to, at least, meet the requirements of the City of Westfield's applicable stormwater management ordinance(s) and must include the following:

i. Location, dimensions, detailed specifications, and construction details of all temporary and permanent stormwater quality measures.
ii. Soil map of the predominant soil types, as determined by the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Soil Survey, or as determined by a soil scientist. Hydrologic classification for soils should be shown when hydrologic methods requiring soils information are used. A soil legend must be included with the soil map.
iii. 14-Digit Watershed Hydrologic Unit Code. Longitude and latitude location.
iv. An estimate of the peak discharge, based on the ten (10) year storm 24-hour event, of the project site for post-construction conditions.
v. Locations where stormwater may be directly discharged into groundwater, such as abandoned wells or sinkholes. Please note if none exists.
vi. Locations of specific points where stormwater discharge will leave the project site.
vii. Name of all receiving waters. If the discharge is to a separate MS4, identify the name of the municipal owner and the ultimate receiving water.
viii. Temporary stabilization plans and sequence of implementation.
ix. Permanent stabilization plans and sequence of implementation.
x. Temporary and permanent stabilization plans shall include the following:

    a. Specifications and application rates for soil amendments and seed mixtures.
    b. The type and application rate for anchored mulch.

xi. General construction sequence of how the project site will be built, including phases of construction.
xii. Construction sequence describing the relationship between implementation of stormwater quality measures and stages of construction activities.
xiii. Location of all soil stockpiles and borrow areas.
xiv. A typical erosion and sediment control plan for individual lot development.
xv. Self-monitoring program including plan and procedures.
xvi. A description of potential pollutant sources associated with the construction activities, which may reasonably be expected to add a significant amount of pollutants to stormwater discharges.
xvii. Material handling and storage associated with construction activity shall meet the spill prevention and spill response requirements in 327 IAC 2-6.1.
xviii. Name, address, telephone number, and list of qualifications of the trained individual in charge of the mandatory stormwater pollution prevention self-monitoring program for the project site.

03102.06 Post-Construction Stormwater Pollution Prevention Plan

The post-construction stormwater pollution prevention plan must include the following information:

i. A description of potential pollutant sources from the proposed land use, which may reasonably be expected to add a significant amount of pollutants to stormwater discharges.
ii. Location, dimensions, detailed specifications, and construction details of all post-construction stormwater quality measures.
iii. A description of measures that will be installed to control pollutants in stormwater discharges that will occur after construction activities have been completed.
iv. A sequence describing when each post-construction stormwater quality measure will be installed.
v. Stormwater quality measures that will remove or minimize pollutants from stormwater run-off.
vi. Stormwater quality measures that will be implemented to prevent or minimize adverse impacts to stream and riparian habitat.
vii. An operation and maintenance manual for all post-construction stormwater quality measures to facilitate their proper long term function. This operation and maintenance manual shall be in a separate cover and shall be made available to future parties who will assume responsibility for the operation and maintenance of the post-construction stormwater quality measures. The manual shall include the following:

    a. Contact information for the BMP owner (i.e. name, address, business phone number, cell phone number, pager number, e-mail address, etc.).
    b. A statement that the BMP owner is responsible for all costs associated with maintaining the BMP.
    c. A right-of-entry statement allowing the WPWD personnel to inspect and maintain the BMP.
    d. Specific actions to be taken regarding routine maintenance, remedial maintenance of structural components, and sediment removal. Sediment removal procedures should be explained in both narrative and graphical forms. A tabular schedule should be provided listing all maintenance activities and dates for performing these required maintenance activities.
    e. Site drawings showing the location of the BMP and access easement, cross sections of BMP features (i.e. pond, forebay(s), structural components, etc.), and the point of discharge for stormwater treated by the BMP.

viii. Any other information necessary for the review the project if LID Approach is being utilized as discussed in Chapter 03700 of these Standards Manual.

03102.07 Review of Individual Lots Within a Permitted Project

For individual lots disturbing less than 1 acre, developed within a larger permitted project, a formal review and issuance of an Erosion and Sediment Control Inspection Permit Request for Residential Lots and Outlots will be required before a building permit can be issued. All stormwater management measures necessary to comply with the City of Westfield's applicable stormwater management ordinance(s) must be implemented in accordance with permitted plan for the larger project.

The following information must be submitted to the WPWD, for review and acceptance, by the individual lot operator, whether owning the property or acting as the agent of the property owner, as part of a request for review and issuance of an Erosion Control Inspection Permit Request that must be obtained prior to the issuance of a building permit.

A. The individual lot operator must complete an Erosion Control Inspection Permit Request and pay the applicable fee.

B. A certified site layout for the subject lot and all adjacent lots showing building pad location, dimensions, and elevations, and the drainage patterns and swales.

C. Erosion and sediment control plan that, at a minimum, includes the following measures:
   i. Installation and maintenance of a stable construction site access.
   ii. Installation and maintenance of appropriate perimeter erosion and sediment control measures prior to land disturbance.
   iii. Minimization of sediment discharge and tracking from the lot.
   iv. Clean-up of sediment that is either tracked or washed onto roads. Bulk clearing of sediment shall not include flushing the area with water. Cleared sediment must be redistributed or disposed of in a manner that is in compliance with all applicable statutes and rules.
   v. Adjacent lots disturbed by an individual lot operator must be repaired and stabilized with temporary or permanent surface stabilization.
   vi. Self-monitoring program including plan and procedures.

D. Name, address, telephone number, and list of qualifications of the trained individual in charge of the mandatory stormwater pollution prevention self-monitoring program for the project site.

The individual lot owner is responsible for installation and maintenance of all erosion and sediment control measures until the site is stabilized.

Additionally, the Permittee is responsible for ensuring that a BMP's measures remain in place during the construction process and that the installation and continuous maintenance of all lot erosion and sediment controls, on and/or adjacent to their lots, as well as curb inlets along the street frontage are monitored.

A temporary construction entrance provides a place for parking vehicles off of the street and a spot where material can be off loaded. This requirement is to provide a stable surface for parking vehicles where mud and other debris will not to be tracked onto the street. Proper maintenance of the area is required until such time as a permanent driveway is installed.

Failure to keep streets clear of mud, sediment, and debris will result in an enforcement action by the WPWD under the authority of the City of Westfield's Stormwater Management Ordinance (05-30). The Permittee will be responsible for incurring all costs associated with cleaning the streets.

03102.08
Changes to Plans

Any changes or deviations in the detailed plans and specifications after approval of the applicable stormwater management permit shall be filed with, and accepted by, the WPWD prior to the land development involving the change. Copies of the changes, if accepted, shall be attached to the original plans and specifications.

03102.09
Fee Structure

A. Fee Amount

As a condition of the submittal and the review of development plans by the WPWD, the applicant shall agree to pay the WPWD the applicable fee, as set by the City of Westfield, with respect to the review of all drainage submittals, preliminary plans, final plans, construction plans and accompanying information and data, as well as any applicable pre-paid inspection fees.

B. Time of Payment

Before the WPWD's approval of plans, the WPWD will furnish a written statement to the applicant specifying the total amount due to the WPWD in connection with the review of the applicant's submittals, plans and accompanying information and data, including the amount required to be paid by applicant for review and pre-paid inspection fees.

As a condition of acceptance of final drainage plans by the WPWD, applicant shall pay to the WPWD the sum set forth in said statement. WPWD may issue such a billing statement before the project advances to the final acceptance stage, and such payment is due by applicant upon receipt of said billing statement regardless of whether the project is advanced to the final acceptance stage.

WPWD shall have the right to not accept the drainage improvements or to not accept the advancement of any project for which the applicable fees have not been paid.

C. Method of Payment

Fees shall be paid by one of the following methods:

- Certified Check
- Cashier's Check
- Money Order
- Such other methods as may be agreed in writing by the WPWD

All checks shall be made payable to the City of Westfield.

D. Waiver of Payment

Fees may be waived for certain projects at the discretion of the City of Westfield.

03102.10
N/A

This section intentionally left blank.

03102.11
Permit Terms and Conditions

In granting a stormwater management permit, WPWD may impose such terms and conditions as are reasonably necessary to meet the purposes of this Ordinance. The project site owner shall insure compliance with such terms and conditions. Non-compliance with the terms and conditions of permits will be subject to enforcement as described in the applicable ordinances.

The project site owner shall inform all general contractors, construction management firms, grading or excavating contractors, utility contractors, and the contractors that have primary oversight on individual building lots of the terms and conditions of the stormwater management permit and the schedule for proposed implementation.

It is the intent of the WPWD to direct the community's physical growth away from sensitive areas and towards areas that can support it without compromising water quality. In the event that a project site is determined to impact or discharge to a Sensitive Area or is located in an Impact Drainage Area, WPWD may require more stringent stormwater quantity and quality measures than detailed in the applicable ordinances or in the latest edition of the Indiana Stormwater Quality Manual.

A. Determination of Sensitive Areas

Sensitive Areas include highly erodible soils, wetlands, threatened or endangered species habitat, outstanding waters, impaired waters, recreational waters, and surface drinking water sources. A listing of highly erodible soils, outstanding water, impaired water, recreation water, and surface drinking water sources can be found in the City of Westfield Storm Water Quality Management Plan (SWQMP) - Part B and its updates. Any discharge from a stormwater practice that is a Class V injection well shall meet the Indiana groundwater quality standards. It is the responsibility of the Developer/Engineer to check if a wetland is present on the project site. If wetlands are suspected on a site, wetland delineation shall be completed in accordance with the methodology established by the U.S. Army Corps of Engineers (COE) and the wetland addressed in accordance to the

requirements of the law. If the presence of threatened or endangered species habitat is suspected on a site, the site must be evaluated and inspected by a professional experienced in such and the results reported to the WPWD. Special terms and conditions for development determined to impact or discharge to any Sensitive Area shall be included in the stormwater management permit.

B. Determination of Impact Drainage Areas
The following areas shall be designated as Impact Drainage Areas, unless good reason for not including them is presented to the WPWD.

i. A floodway or floodplain as designated by the most updated City of Westfield Code dealing with floodplain regulation.

ii. Land within 75 feet of each bank of any ditch within the Hamilton County Regulated Drainage System.

iii. Land within 75 feet of the centerline of any drain tile or enclosed conduit within the Hamilton County Regulated Drainage System.

WPWD is authorized, but is not required, to classify certain additional geographical areas as Impact Drainage Areas. In determining Impact Drainage Areas, WPWD shall consider such factors as land use, topography, soil type, capacity of existing drains, and distance from adequate drainage facility. Land that does not have an adequate outlet, taking into consideration the capacity and depth of the outlet, may be designated as an Impact Drainage Area by the WPWD. Special terms and conditions for development within any Impact Drainage Area shall be included in the stormwater management permit.

SECTION 03103 CONSTRUCTION INSPECTIONS AND APPROVAL

03103.01 Introduction

After the approval of the stormwater management permit, WPWD has the authority to conduct inspections of the work being done to ensure full compliance with the provisions of the applicable ordinances and this Manual, and the terms and conditions of the approved permit. The installed storm sewer shall not be accepted by the WPWD until all requirements for inspection and testing described in this Manual are completed. Inspection of the stormwater drainage system and associated land grading and erosion control measures shall be completed by the WPWD as set forth herein to ensure conformance with the approved site construction plan and supporting documents. Any portion of the stormwater facility not passing the tests prescribed herein shall be repaired or replaced to the extent required by the WPWD, and retested.

03103.02 General Requirements

The Contractor and/or Owner shall provide written notice to the WPWD of planned commencement of construction forty-eight (48) hours prior to such commencement. Copies of the final, approved construction plans, stormwater drainage technical report, stormwater pollution prevention plan for construction sites, and post-construction stormwater pollution prevention plan shall also accompany the above-noted written notification. The number of required copies varies from case to case and should be determined by contacting the WPWD.

A pre-construction meeting is required to be held with the participation of the WPWD and other entities involved prior to any grading activity to ensure that appropriate erosion control measures have been implemented on the site and the location of any existing tiles has been properly marked.

A stop-work-order shall be issued by the WPWD for all projects that are proceeding without such notification, pre-construction meeting, or deviation from any of the specifications described herein without approval. WPWD has the authority to conduct inspections of the work being done to ensure full compliance with the provisions of the applicable ordinances and this Manual, and the terms and conditions of the approved permit.

03103.03
Testing

Once constructed, all storm sewer pipes and manholes shall be water tight. All storm and subsurface drains shall be cleaned and televised after ALL underground utilities are installed with a copy on a CD or thumb drive delivered to the WPWD Inspector. The Contractor shall repair to the satisfaction of the WPWD all visible points of possible bedding and/or backfill infiltration into the system. The method of repair shall be per the approval of the WPWD. When necessary, the Contractor shall remove and reconstruct as much of the work as is necessary to obtain a system that passes the minimum tests prescribed herein.

A. Mandrel Test for Plastic Pipes

No sooner than thirty (30) days after installation, all storm water pipe constructed of PVC or HDPE larger than 6 inches in diameter shall be mandrel tested. A representative of the WPWD shall be present on-site during all mandrel tests. WPWD shall be given written notification of the proposed testing times and locations at least 48 hours prior to the intended time for beginning of the tests. Arrangements for the cost and supply of all equipment necessary to perform mandrel tests shall be the responsibility of the Contractor and Owner.

Mandrel tests shall be conducted under the supervision of the WPWD.

A seven and one-half (7-1/2) percent "GO/NO-GO" Mandrel Deflection Test shall be performed on all PVC and HDPE gravity storm sewer pipe. HDPE and PVC gravity storm sewer pipe shall not be permitted for any other use than sub-surface drains unless a special circumstance requires its use as determined and approved by the WPWD.

These pipes shall be mandrel led with a rigid device sized to pass seven and one-half (7-1/2) percent or less deflection (OR deformation) of the base inside diameter of the pipe. The mandrel test shall be conducted no earlier than thirty (30) days after reaching final trench backfill grade.

The mandrel (GO/NO-GO) device shall be cylindrical in shape and constructed with nine (9) or ten (10) evenly spaced arms or prongs. Variations of mandrel diameter dimensions due to pipe wall thickness tolerances or ovality (from heat, shipping, poor production, etc.) shall not be deducted from the diameter dimension of the mandrel but shall be counted as par of the 7-1/2% or lesser deflection allowance. Each pipe material/type required to be Mandrel tested shall be tested with a mandrel approved by the WPWD and meeting the requirements of this chapter. The mandrel diameter dimension shall carry a minimum tolerance of 0.01 inches.

The mandrel shall be hand pulled through all sewer lines and any section of sewer not passing the mandrel shall be uncovered, replaced or repaired, and retested.

The contact length (L) shall be measured between points of contact on the mandrel arm.

The Contractor shall provide proving rings to check the mandrel. Drawings of mandrels with complete dimensions shall be furnished by the Contractor to the WPWD upon request for each diameter and specification of pipe.

B. CMP and RCP Inspections

All reinforced concrete and corrugated metal storm sewer pipes that are 42 inch in diameter or larger shall be inspected through a walk through (visual survey) inspection with the contractor, developer, and a representative from the WPWD.

All reinforced concrete and corrugated metal storm sewer pipes are required to be inspected through closed circuit television viewing (CCTV) at the developer's or contractor's expense by the WPWD's representative as described herein. In those instances where CCTV is a required part of the stormwater permits approval, this televised viewing shall be completed in conformance with these minimum guidelines. The inspection between manholes shall be conducted as follows:

1. A camera equipped with remote control devices to adjust the light intensity and one thousand (1,000) lineal feet of cable shall be provided. The camera shall be able to transmit a continuous image to the television monitor as it is being pulled though the pipe. The image shall be clear enough to enable the WPWD to easily evaluate the interior condition of the pipe. The camera should have a digital display for lineal footage and project number and an audio voice-over shall be made during the inspection identifying any problems. Reference WPWD Standards Section 02750.

2. All pipe, including sub-surface drains, shall be thoroughly cleaned before the camera is installed and televising is commenced. Cleaning of the pipe shall be the responsibility of the owner.

3. The CD – Digital format, as directed by the WPWD, of the entire storm sewer line and reproduction map indicating the pipe segment numbers of all the pipe that has been televised shall be submitted to the department for review and placement in their permanent file. The pipe should be flooded with clear water just prior to video recording to show any bellies or sags in the pipe.

These inspections shall be required in order to identify, as examples, excessive sedimentation, joint failures, excessive deflections (CMP), damaged coatings or paving (CMP), structural defects, misalignments, sags, or other system defects which have the potential of affecting the hydraulic performance, durability, or structural integrity of the line segment. Reference should be made to Chapter 03400 of this manual for guidance on criteria sufficient to warrant rejection of the installed storm sewer system.

Excessive deflection of CMPs shall be considered to exist under the following conditions: variations from a straight centerline; elliptical shape in a pipe intended to be round; dents or bends in the metal. Metallic or bituminous coatings that have been scratched, scraped, bruised, or otherwise broken shall be considered acceptable criteria for rejection of the installed system.

Any pipe and/or joint found to be defective as a result of the televised viewing shall be required to be repaired or replaced to the satisfaction and approval of the WPWD. A re-televising of that portion of the storm sewer line identified as needing repair or replacement shall be required.

C. Manhole and Box Inlet Inspection

Each manhole and/or box inlet structure within all storm sewer line segments shall be visually inspected by a representative of the WPWD prior to backfill to ensure seams are sealed, pipes have concrete collars, and structure is watertight. A secondary inspection by a representative of the WPWD shall be required to check for excessive leakage, backfill infiltration, or improper workmanship and materials. Doghouse structures shall be permitted with approval from the WPWD. Manholes or box inlet structures which fail to

meet minimum construction standards shall be repaired or, if necessary, replaced, and reinspected.

03103.04 Release of Performance Sureties

Notice of the scheduled date for completion of construction shall be provided to the WPWD at least seventy-two (72) hours prior to its planned completion. The Contractor or Owner will schedule the final inspection, the storm drain and site grading performance sureties will be released after submittal and approval by the WPWD of the following information (Reference Section 01001):

1. All punch list items are completed and verified by the WPWD.

2. As-built or record drawings prepared under the supervision of and certified by a Professional Engineer or Land Surveyor registered in the State of Indiana, as described in Section 03103.05 of this Manual.

2. For subdivided and platted or developments larger than two (2) acres, a copy of the maintenance bond, as required in Section 03104-01 of this Manual, in a form approved by the City of Westfield.

3. A "Certificate of Completion and Compliance" certifying that the completed storm drainage system and stormwater management facilities substantially comply with construction plans and the stormwater management permit as approved by the WPWD.

That portion of the performance surety associated with the storm sewer system, detention facilities, and Post-Construction BMPs may be released by the WPWD prior to the release of performance surety associated with early permanent site stabilization or the installation of required erosion and sediment control measures for individual lots within a permitted subdivision. The performance surety associated with erosion and sediment control measures may only be released upon the final acceptance of the project and the issuance of the "verified" NOT in accordance with the requirements of Rule 5 (327 IAC 15-5), i.e., upon stabilization of the entire construction site and the removal of temporary erosion and sediment control measures, which may be achieved before or after the construction of all individual lots within a subdivision.

03103.05 As-built or Record Drawings

As part of the final acceptance process, record drawings of the stormwater facilities must be submitted to the WPWD, as set forth herein, for the following types of developments:

- All platted subdivisions
- Industrial and commercial sites five acres and larger

After completion of construction of the project and before final project acceptance of the stormwater management plan (the issuance of a "verified" NOT), a professionally prepared and certified record drawings ('as-built' set of plans) by a Professional Engineer or licensed Land Surveyor registered in the State of Indiana shall be submitted to the WPWD for review. These as-built plans/record drawings must be prepared and certified by the Engineer of Record, i.e., the company/engineer who originally prepared the construction plans. Additionally, a digital copy of the record drawings ('as-built' plans) as well as finalized digital versions of all analyses, models, manuals, and reports that are consistent with the as-built conditions is required in a format accepted by the WPWD. These plans shall include all pertinent data relevant to the completed storm drainage system and stormwater management facilities, and shall include:

1. Pipe size and pipe material

2. Invert elevations, top of casting elevations, swale flow lines, lot elevations, etc

3. Top rim elevations

4. Pipe structure lengths

5. BMP types, dimensions, and boundaries/easements

6. "As-planned" plans for BMPs, as applicable

7. Data and calculations showing detention basin storage volume

8. Data and calculations showing BMP treatment capacity

9. Certified statement on plans stating the completed storm drainage system and stormwater management facilities substantially comply with construction plans and the stormwater management permits as approved by the WPWD.

In addition, any requirements established by the City of Westfield Digital Submission Standards shall also be met.

03103.06 Enforcement of Standards

Failure to comply with those minimum guidelines set forth by the manual may result in Enforcement Action per the Storm Water Management Ordinance as well as a Stop-Work order.

SECTION 03104 POST-CONSTRUCTION MAINTENANCE REQUIREMENTS

03104.01 Maintenance Surety

Stormwater quantity and quality management facilities shall be maintained in good condition, in accordance with the Operation and Maintenance procedures and schedules listed in the latest editions of the Indiana Stormwater Quality Manual or requirements contained in this Manual, and the terms and conditions of the approved stormwater permit, and shall not be subsequently altered, revised, or replaced except in accordance with the approved stormwater permit, or in accordance with approved amendments or revisions in the permit. Following construction completion and before the release of maintenance sureties described below, the maintenance of stormwater quantity or quality facilities may become the long-term responsibility of the owner of the facility.

A table listing the name and location of every post-construction stormwater quality BMPs shall also be included on the recorded plat. A sample table is provided as Table 03104-1.

The property owner, developer, or contractor shall be required to file a three-year maintenance bond or other acceptable guarantee with the City of Westfield, prior to the release of Performance Sureties. Specifically, the said assurance is intended to guarantee that the following be properly maintained after the construction under the provisions of the City of Westfield's applicable stormwater management ordinance(s) and this Technical Standards:

- Post-Construction Erosion and sediment controls
- Storm sewer system
- Sub-Surface Drains (SSD)
- Detention facilities
- Post-Construction BMPs

The maintenance surety shall further be conditioned upon owner, developer, or contractor satisfactorily completing, within the three-year period following the completion of construction, such corrective actions as the WPWD may determine are reasonably necessary to remedy any damages to upstream or downstream channels or storm sewers resulting from the as-built development of the project.

Bonds or letter of credit are to be made out to the City of Westfield. Said financial maintenance guarantee shall be conditioned upon the following:

1. A sum shall be fixed and approved by the WPWD equal to ten percent (10%) of the actual construction cost of all stormwater management improvements and installations provided in the construction drawings and accompanying data to specifications cited herein. Said costs shall be for the installation and ongoing monitoring and post-construction maintenance of storm drainage infrastructure, detention/retention facilities, and stormwater quality BMPs, as regulated under the City of Westfield's applicable stormwater management ordinance(s) and this Technical Standards. Assurances shall be for a minimum of $5,000. Reference Section 01001.

2. Each public facility improvement or installation provided in the final plat or accompanying data shall be bonded individually and shall not have the maintenance guarantee provided in combination with any of the other public facility improvements and installations.

3. The maintenance surety shall be issued in the name of the owner, developer, contractor or other responsible party as determined by the WPWD.

03104.02 Post-Construction Inspection

The City of Westfield and WPWD has the authority to perform long-term, post-construction inspection of all public or privately owned stormwater quantity and quality facilities. The inspections will follow the Operation and Maintenance procedures included in this Manual and/or permit application for each specific BMP. The inspection will cover physical conditions, available water quantity and quality storage capacity and the operational condition of key facility elements. Noted deficiencies and recommended corrective action will be included in an inspection report. If deficiencies are found during the inspection, the owner of the facility will be notified by the WPWD's Office and will be required to take all necessary measures to correct such deficiencies. If the owner fails to correct the deficiencies within the allowed time period, as specified in the notification letter, the WPWD will undertake the work and collect from the owner using lien rights if necessary.

03104.03 Release of Maintenance Sureties

The maintenance surety posted by the developer, owner, or the contractor shall run and be in force for a period of three (3) years from the date of release of the performance surety.

To verify that all enclosed drains are functioning properly, all storm sewer including sub-surface drains are to be cleaned and televised with visual recordings (via closed circuit television) of such tile drains shall be required before release of maintenance sureties. These visual recordings will be scheduled at least 90 days prior to the expiration date of the maintenance bond. Reports summarizing the results of the noted visual recordings shall be reviewed and accepted by the WPWD before maintenance sureties would be recommended to be released.

SECTION 03105 OTHER REQUIREMENTS

03105.01 Floodplain Management

Floodplain management shall be in accordance with the City of Westfield's adopted floodplain regulations. In addition to these regulations, the following floodplain policy is adopted by the City of Westfield.

The intent of Floodplain management is to protect against loss of property, protect human life, and maintain natural beneficial functions of floodplains in helping mitigate flooding and providing habitat and water quality benefits. Therefore, filling of the land in the floodplain of a regulated drain or any natural stream or watercourse, that has a defined channel and a contributing drainage area of 25 acres or more, located within the land under the jurisdiction of the City of Westfield government is prohibited. The use of the floodplain area for detention/retention ponds or lakes is also prohibited. Floodplain boundaries are to be determined by using the 100-year Base Flood Elevation (BFE) as shown on the Flood Insurance Rate Maps (FIRM) of the Federal Emergency Management Agency (FEMA), or the best available/calculated data if FIRM does not show the BFE and the Hamilton County 1-foot topographic data available on the Hamilton County GIS webpage.

A. If, during the process of using the BFE and the 1-foot topographic data, it is determined that the FIRM is incorrect, then a Letter of Map Revision (LOMR) to correct the FIRM is to be filed with FEMA. No filling of the floodplain, either the floodplain shown on the FIRM or the floodplain determined by the Floodplain Study, whichever is more conservative, will be allowed until an approved copy of the LOMR is provided to the City of Westfield.

B. If a FIRM does not establish a 100-year BFE for a regulated drain, natural stream, or natural watercourse, the 100-year BFE shall be established through a site specific Floodplain Study performed by a Professional Engineer registered in the State of Indiana.

   1. If the drainage area for the Floodplain Study reach is greater then 1 square mile at the farthest downstream point of the study reach, then the Floodplain Study must be submitted to IDNR – Division of Water for approval and to the WPWD for review and comment. A copy of the final study, approved by IDNR-Division of Water, must be submitted to the WPWD as part of the project requiring the study to be completed. Upon acceptance of the Floodplain Study by IDNR – Division of Water, a Letter of Map Revision (LOMR) is to be filed with FEMA to incorporate the new Floodplain Study into the new FIRM panels.

   2. If the drainage area for the Floodplain Study reach is less then 1 square mile at the farthest downstream point of the study reach, then the Floodplain Study must be submitted to the WPWD for review and approval. The methodology for determining the BFE shall be in accordance to Chapters 03200 and 03300 of these Standards. WPWD will have the option to send the Floodplain Study to a consulting engineering firm for review and comment, should the accuracy of the Floodplain Study be in question. The cost of the consulting engineering firm's time will be the responsibility of the owner of the project and will need to be approved in a written agreement prior to any review of the Floodplain Study by the consulting engineer.

C. The requirements of this section do not apply to the following:

   1. Agricultural uses such as crop production, pastures, orchards, tree farms, planting nurseries, vineyards, and general farming.

   2. Forestry, wildlife areas and nature preserves.

   3. County, City, or Township Parks.

   4. Public Streets, bridges, and roadways, as long as the crossing structure are properly sized to convey the natural stream or watercourse and not raise the 100-year BFE.

5. Regional Detention Basins approved by the WPWD. (By definition, a regional pond is a pond that detains all tributary on-site and off-site flows upstream of its outlet.)

D. Regulated Drain Watershed Considerations

If the project site is within a Hamilton County Regulated Drain Watershed, the applicant will also need to abide by the Hamilton County Surveyor's Office applicable floodplain management requirements, whether the site is located in an incorporated area or not.

03105.02 Grading and Building Pad Elevations

Maximum yard slopes are 3:1 where soil has been disturbed during construction processes. Finished floor elevation or the lowest building entry elevation must be no less than 6 inches above finished grade around the building. Also, the building's lowest entry elevation that is adjacent to and facing a road shall be a minimum of 15 inches above the road elevation.

All buildings shall have a minimum flood protection grade shown on the secondary plat. Minimum Flood Protection Grade of all structures fronting a pond or open ditch shall be no less than 2 feet above any adjacent 100-year local or regional flood elevations, whichever is greater, for all windows, doors, attached garage entrances, unsealed pipe entrances, window well rim elevations, and any other structure member where floodwaters can enter a building.

For all structures located in the Special Flood Hazards Area (SFHA) as shown on the FEMA maps, the lowest floor elevations of all residential, commercial, or industrial buildings shall be such that Lowest Floor elevation, including basement, shall be at the flood protection grade and therefore have 2 feet of freeboard above the 100-year flood elevation.

The Lowest Adjacent Grade for residential, commercial, or industrial buildings outside a FEMA or IDNR designated floodplain shall have 2 feet of freeboard above any applicable local or regional flooding sources' 100-year flood elevation under proposed conditions, whichever is greater. Lowest Adjacent Grade is the elevation of the lowest grade adjacent to a structure, where the soil meets the foundation around the outside of the structure (including structural members such as basement walkout, attached garage door entrance, patios, decks, porches, support posts or piers, and rim of the window well.

For areas outside a FEMA or IDNR designated floodplain, the Lowest Adjacent Grade (including walkout basement floor elevation) for all residential, commercial, or industrial buildings adjacent to ponds shall be set a minimum of 2 feet above the 100-year pond elevation or 2 feet above the emergency overflow weir elevation, whichever is higher. In addition to the Lowest Adjacent Grade requirements, any basement floor must be at least a foot above the permanent water level (normal pool elevation).

Special considerations, based on detailed geotechnical analysis, should be made prior to considering placement of any basement below the 100-year flood elevation of an adjacent flooding source or pond.

The LAG requirements for buildings adjacent to overflow path/ponding areas are discussed in Section 03303.07 of this Manual. In case there are more than one flooding sources applicable to a building site, the highest calculated LAG for the building shall govern the placement of the building on that site.

03105.03 Policy on Dams and Levees

Dams and levees have the potential for significant, sometimes catastrophic consequences should they fail. In order to minimize the potential for loss of life and public safety, decrease the potential for increased flood damage and disaster costs, and safeguard the downstream property rights, the following shall be required by the HCSO for any proposed new or improvements to any existing

dam or levee. These requirements are in addition to what is normally required for other development subject to this Ordinance and/or that required by State or Federal agencies.

A. Design of dams shall follow the requirements of the latest edition of IDNR-Division of Water "General Guidelines for New Dams and Improvements to Existing Dams in Indiana" as well as principles provided in the latest edition of "Indiana Dam Safety Inspection Manual".

B. Design of levee/floodwalls shall follow the FEMA requirements and guidelines provided in 44 CFR Section 65.10 and USACE Engineer Manual 1110-2-193, Design and Construction of Levees.

C. An Emergency Action Plan (EAP), including a detailed dam breach inundation map, shall be developed in accordance with the template provided in the latest edition of "Indiana Dam Safety Inspection Manual" and submitted to the HCSO. The detailed dam breach inundation map referenced in this paragraph shall be developed for both "Sunny Day Breach" Scenario (breach during normal loading conditions) and for maximum loading condition with breach assumed to occur as the spillway system is passing the Spillway Design Flood associated with the dam ("SDF + Breach" Scenario).

D. Unless the "Sunny Day Breach Inundation Area" is entirely contained within the applicant's property and/ or contained within the existing 1% annual chance (100-year) floodplain, a copy of recorded flood/inundation easement or a recorded written consent for every property within the potential "Sunny Day Breach Inundation Area" shall be submitted to the HCSO. In addition, all the affected property owners whose properties are located within the "SDF + Breach Inundation Area" must be notified of a hearing relevant to the proposed added risk. Notification of the time and place of the hearing shall be made in person or by certified mail at least five (5) to ten (10) days prior to the hearing. Proof of notice to each landowner shall be filed by affidavit with the HCSO prior to the hearing.

E. A copy of a Management and Maintenance Plan for the proposed dam or levee developed in accordance with the latest edition of "Indiana Dam Safety Inspection Manual" shall be submitted to the HCSO.

F. Following the permitting and construction of the dam or levee, a copy of a formal periodic inspection report prepared in accordance with the recommendations contained in the latest edition of "Indiana Dam Safety Inspection Manual" shall be submitted to the HCSO along with evidence that the identified maintenance deficiencies have been corrected. The inspection report has to be submitted as it gets completed in accordance with the inspection frequency recommended in the latest edition of "Indiana Dam Safety Inspection Manual".

SITE OUTLET #	ITEM	PRE-DEVELOPMENT					POST-DEVELOPMENT				
		D.A. (ac)	Depress. Storage? (yes/no)	2-Yr.	10-Yr.	100-Yr.	D.A. (ac)	Depress. Storage? (yes/no)	2-Yr.	10-Yr.	100-Yr.
1	Default Unit Discharge Allowable Release Rate (cfs/acre)									0.1	0.3
	Basin-Specific Unit Discharge Allowable Release Rate, if any (cfs/acre)										
	Unit Discharge Allowable Release Rate Based on D/S Restrictions, if any (cfs/acre)										
	Adopted Unit Discharge Allowable Release Rate (cfs/acre)										
	Contributing Area of Development Site (ac) and Allowable Release Rate (cfs)										
	Total Contributing DA (ac) and Modeling Results (cfs)							no			

Table 03102-1: Allowable Release rate Determination and Modeling Results

Structure Number	BMP Name	BMP Description	BMP Location

Table 03104-1: Listing of Post-Construction Stormwater Quality BMPs Proposed to be Accepted as Part of Hamilton County Regulated Drainage System

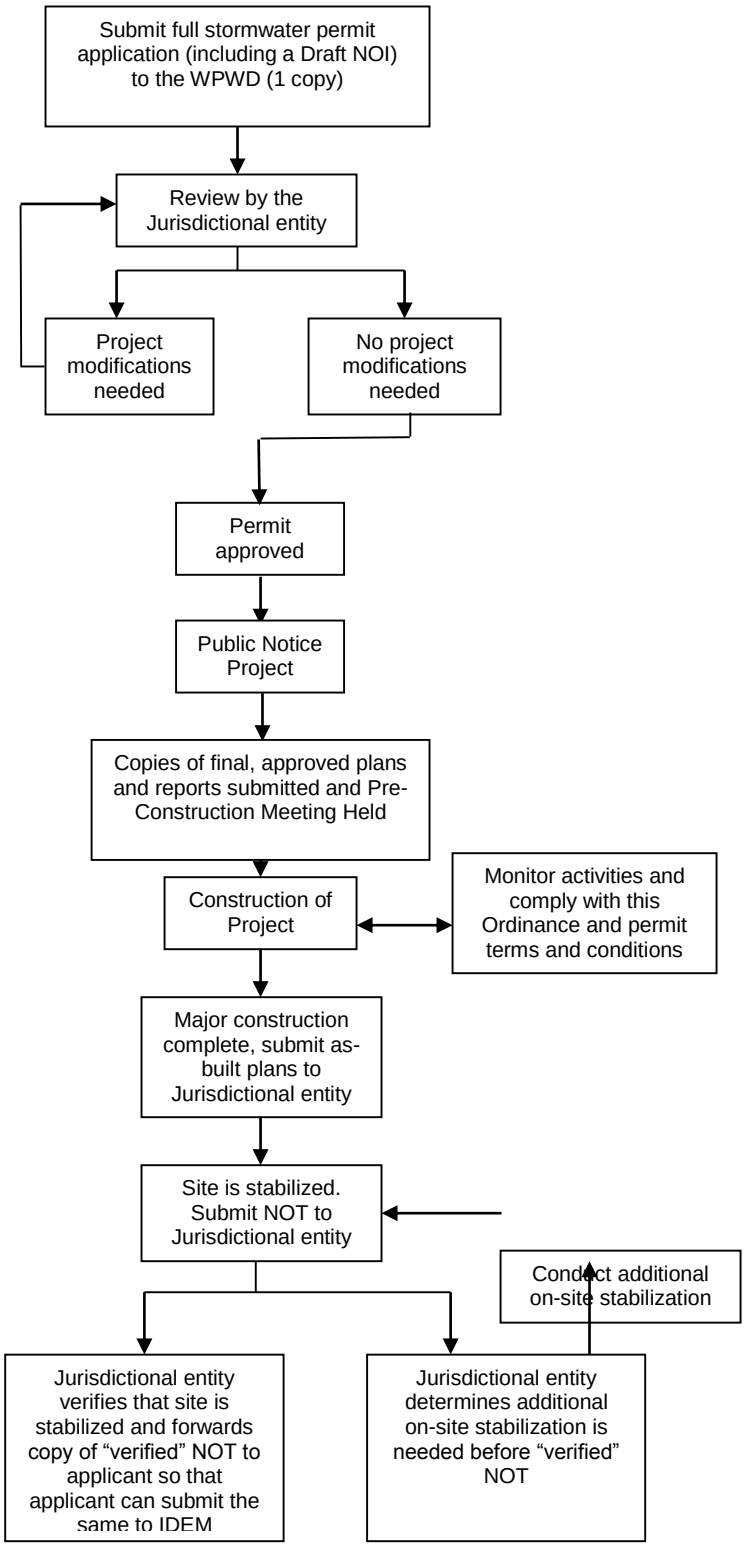

Exhibit 03102-1: Flow Chart of the Stormwater Plan Review/Permit Process